

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zhang et al.
Serial No.: 10/671,434
Conf. No.: 5812
Filed: September 24, 2003
For: METHOD AND APPARATUS FOR
ANALYZING PERFORMANCE OF A
HYDRAULIC PUMP
Art Unit: 3746
Examiner: Unassigned

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November 22, 2004

Date
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Registration No. 43,874

Appr. February 20, 1998 Attorney for Applicant

INFORMATION DISCLOSURE STATEMENT

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Dear Sir:

This IDS is submitted under 37 C.F.R. §1.97(b) within either of the following time periods, whichever occurs last:

- (a) within three months of either the filing date of the national application or the date of entry into the national stage; or
- (b) before the mailing date of first office action on the merits (i.e., not including actions such as restriction requirements).

Applicant(s) submit herewith Form PTO-1449 (Information Disclosure Citation) together with copies of patents, publications or other information of which applicant(s) are aware, which applicant(s) believe may be material to the examination of this application and for which there may be a duty to disclose in accordance with 37 C.F.R. §1.56. Applicant(s) respectfully submit that the citation of any reference on Form PTO-1449 does not constitute an admission that the reference qualifies as prior art.

It is requested that the information disclosed on the enclosed Form PTO-1449 be made of record in this application.

The Commissioner is hereby authorized to charge any additional fees which may be required to this application under 37 C.F.R. §§1.16-1.17, or to credit any overpayment, to Deposit Account No. 07-2069. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,
GREER, BURNS & CRAIN, LTD.

By:

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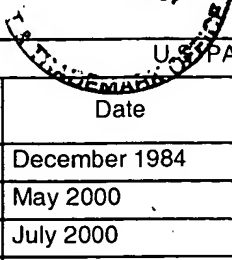
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Form PTO-1449 U.S. Department of Commerce (Rev. 8-88) Patent and Trademark Office	Attorney Docket No.: 1201.68320	Serial No.: 10/671,434
INFORMATION DISCLOSURE CITATION (Use several sheets if necessary)		
		
Applicant: Zhang et al.		Filing Date: 09/24/2003
		Group: 3746

U.S. PATENT DOCUMENTS						
Examiner Initial*	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	4,489,551	December 1984	Watanabe et al.			
	6,055,851	May 2000	Tanaka			
	6,087,945	July 2000	Yasuda			

FOREIGN PATENT DOCUMENTS							
	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No
	2000-241306	Sept. 8, 2000	Japan				
	11-085266	March 30, 1999	Japan				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	
	Angeli et al., "An expert system approach to fault diagnosis in hydraulic systems", Expert System, Vol. 12 No. 4, pp. 323-329 (1995).
	Borras, D., M. Castilla, N. Moreno, and J.C. Montano, 2001. Wavelet Neural Structure: A New Tool For Diagnostic of Power Disturbances. IEEE Transactions on Industrial Applications, 37(1): 184-190 (2001).
	Boulahbal, D., M.F. Golnaraghi, and F. Ismail, "Amplitude and Phase Wavelet Maps for the Detection of Cracks in Gear Systems", Mechanical Systems and Signal Processing, 13(3): 423-436 (1999), www.idealibrary.com.
	Chen, Z., 1994, Research on faults diagnosis expert system of electro-hydraulic control system (in Chinese). Ph.D. Dissertation, Zhejiang University, Hangzhou, China.
	Choi, H.I. and W.J. Williams, "Improved Time-Frequency Representation of Multicomponent Signals Using Exponential Kernels", IEEE Transactions on Acoustics, Speech, and Signal Processing, 37(6): 862-871 (1989).
	Cohen, L., "Time-Frequency Distributions--A Review. Proceedings of IEEE Transactions on Acoustics, Speech, and Signal Processing", 77(7): 941-981 (1989).
	Dalpiaz, G., A. Rivola, and R. Rubini, "Effectiveness and Sensitivity of Vibration Processing Techniques for Local Fault Detection n Gears", Mechanical Systems and Signal Processing, 14(3): 387-412 (2000), www.idealibrary.com.
	Daubechies, I., A. Grossmann, and Y. Meyer, "Painless Nonorthogonal Expansions", Journal of Mathematical Physics, 27(5): 293-309 (1986).

Examiner	Date Considered
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						Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

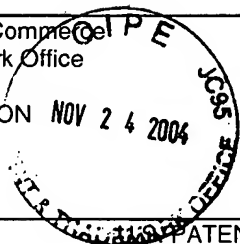
	Deng, X., Q. Wang, and V. Giurgiutiu, "Structural health monitoring using active sensors and wavelet transforms", <i>Proceedings of SPIE</i> , Vol. 3668, Newport Beach, CA, pp. 363-70 (1999).
	Gabor, D., "Theory of Communication", <i>Journal of Institution on Electronic Engineering</i> , 93:429-441 (1945).
	Gao, Y., Q. Zhang, Wavelet Analysis for Piston Pump Fault Diagnosis, IFPE Conference, Vol. No. 7, pp. 183-187, 2002.
	Graps, A., "An Introduction to Wavelets", <i>IEEE Computational Science & Engineering</i> , 2: 50-61 (1995).
	Guo, H., J.A. Crossman, Y.L. Murphey, and M. Coleman, "Automotive Signal Diagnostics Using Wavelets and Machine Learning", <i>IEEE Transactions on Vehicular Technology</i> , 49(5): 1650-1662 (2000).
	Guttler, S. and H. Kantz, "The Auto-Synchronized Wavelet Transform Analysis for Automatic Acoustic Quality Contro", <i>Journal of Sound and Vibration</i> , 243(1): 3-22 (2001), www.idealibrary.com .
	He, D., X. Wang, A. Babayan, and Q. Zhang, "Intelligent Equipment Health diagnosis and Prognosis Using Wavelets: The Status of Research and Industrial Applications", In: Zhang, Q. (ed), <i>Proceedings of Automation Technology for Off-road Equipment</i> , ASAE, St. Joseph, MI, pp: 77-88 (2002).
	Kasashima, N., K. Mori, G.H. Ruiz, and N. Taniguchi, "Online Failure Detection in Face Milling Using Discrete Wavelet Transform", <i>Annals of the CIRP</i> , 44(1): 483. (1995)

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PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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						Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	Li, X., Y. Yao, and Z. Yuan, "On-Line Tool Monitoring System with Fuzzy Neural Network", <i>Journal of Intelligent Manufacturing</i> , 8:271-276 (1997).
	Lin, J. and L. Qu, "Feature Extraction Based on Morlet Wavelet and its Application for Mechanical Fault Diagnosis", <i>Journal of Sound and Vibration</i> , 234(1): 135-148 (2000).
	Liu B., S.F. Ling, and R. Gribonval, "Bearing Failure Detection Using Matching Pursuit", <i>NDT& E International</i> , 35: 255-262 (2002).
	Liu et al., "Pulsating parameter method for fault diagnosis for a hydraulic pump", <i>Proceedings of IECON'91</i> , pp. 2145-50 (1991).
	Mallat, S., "A Theory for Multiresolution Signal Decomposition: The Wavelet Representation", <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , 11: 674-693 (1989).
	Mitchell, "Research into a sensor-based diagnostic maintenance expert system for the hydraulic subsystem of a continuous mining machine", <i>IEEE Trans. on Industry Application</i> , Vol. 5, pp. 1192-1199 (1991).
	Newland, "Wavelet analysis of vibration. Part 1: Theory." <i>Trans. ASME Journal of Vibration and Acoustics</i> , Vol. 116, pp. 417-425 (1994).
	Nikolaou N.G., and I.A. Antoniadis, "Rolling Element Bearing Fault Diagnosis Using Wavelet Packets", <i>NDT&E International</i> , 35: 197-205 (2002).

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FOREIGN PATENT DOCUMENTS

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	Document Number	Date	Country	Class	Subclass	Yes	No

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	Webster Product Overview Brochure, pp 1-8 (05/01).
	Webtec Brochure, 2001, pp 1-4.
	Webtec Brochure, 2001, pp 1-40.

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